

Fig.1

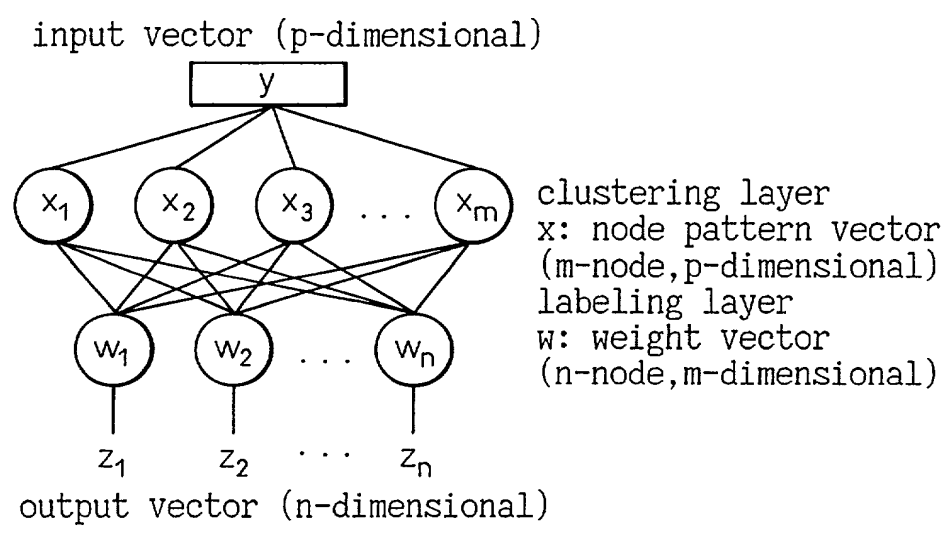


Fig.2

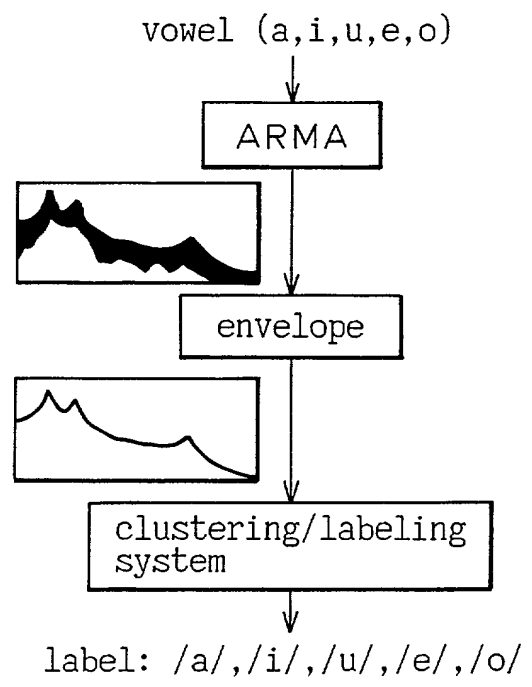


Fig.4

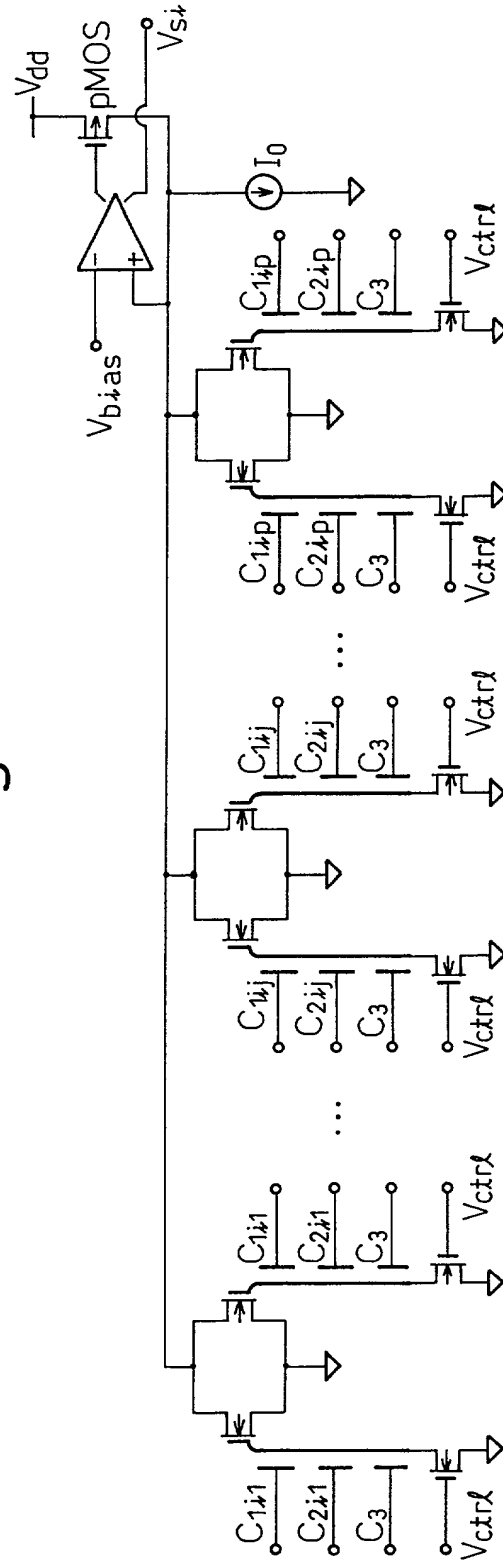


Fig.5

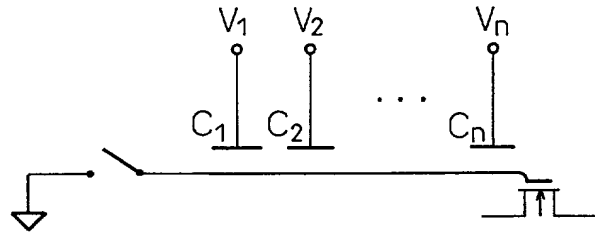


Fig.6A

pre-charge cycle

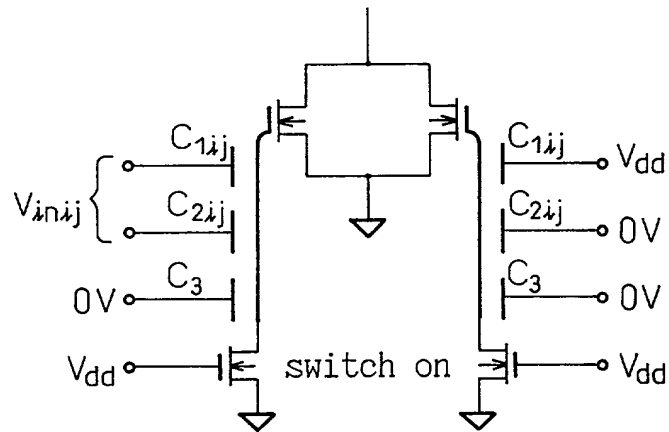


Fig.6B

execute cycle

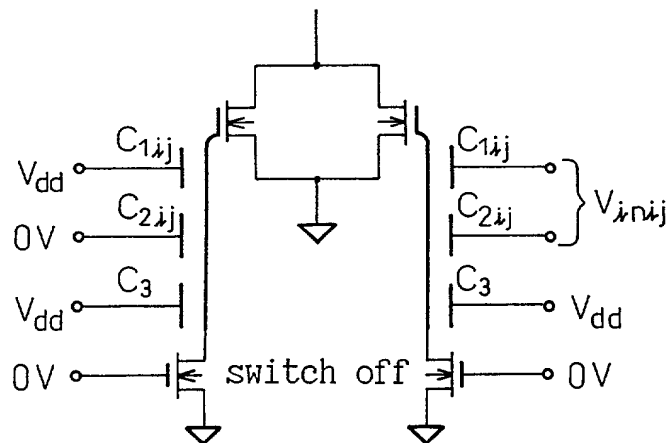


Fig.7

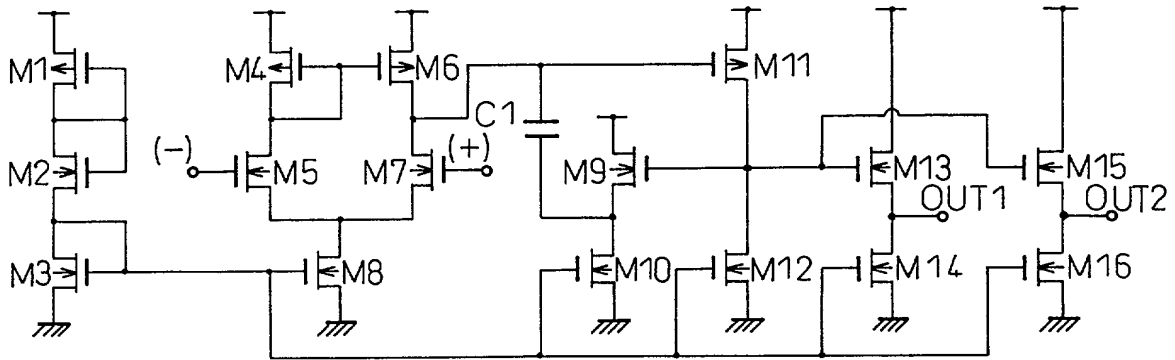


Fig.8

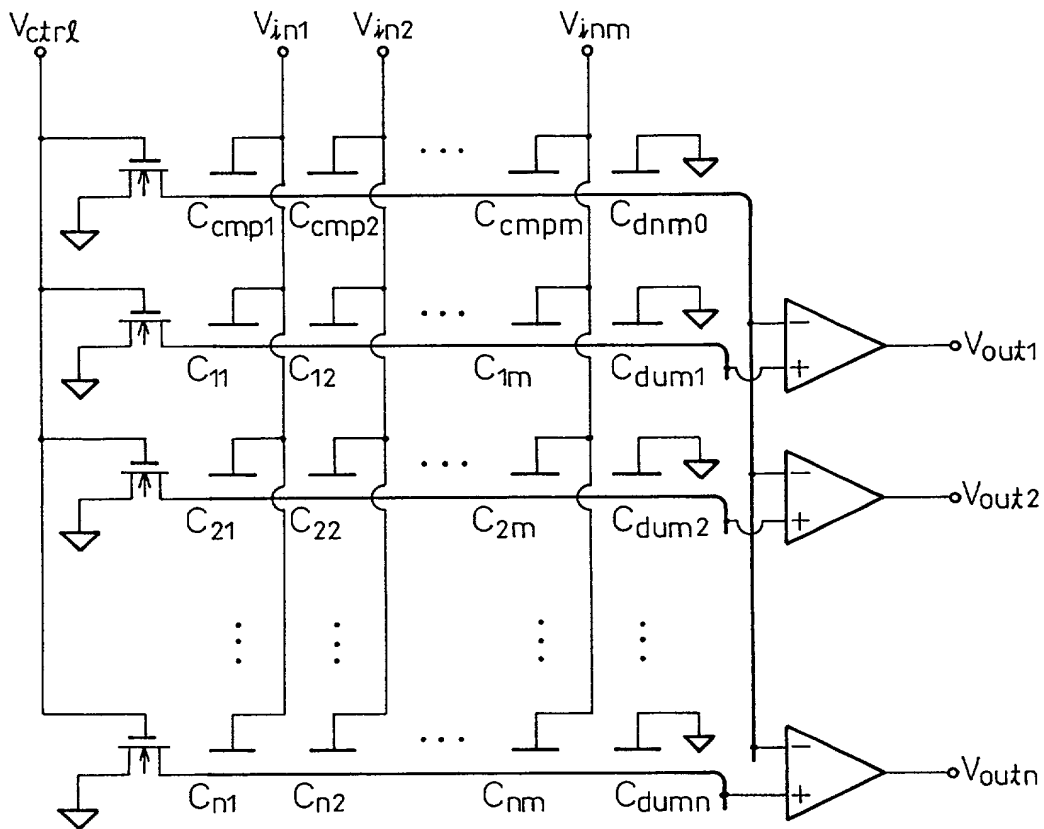


Fig.10

template values of clustering layer (C1 value [fF] C2=255-C1)

node no.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
0	225	235	232	228	239	252	229	225	221	195	176	163	152	143	138	139	148	170	179	162	157	161	164	159	155	143	124	109	97	88
1	253	251	246	236	226	217	208	202	196	193	190	188	185	182	181	188	202	210	209	217	232	243	243	240	225	214	210	199	177	156
2	246	248	250	208	189	183	186	199	198	181	172	169	164	158	155	154	149	137	127	125	130	144	160	165	174	167	156	157	135	108
3	225	238	251	220	200	185	174	166	161	161	165	172	181	188	185	181	183	192	185	166	157	154	156	156	155	154	138	121	110	102
4	231	248	252	229	234	194	160	139	125	119	118	117	118	123	125	112	99	92	90	93	102	115	132	137	104	99	73	52	40	34
5	242	248	247	200	175	162	156	153	155	159	161	158	156	157	165	183	206	195	189	195	205	207	207	204	190	183	177	165	148	133
6	235	242	238	240	249	251	244	238	221	204	189	174	162	154	151	154	164	185	193	174	167	168	173	175	168	155	140	125	112	100
7	229	242	249	217	211	182	152	132	120	112	106	101	98	97	97	93	85	79	79	83	90	101	118	123	110	102	69	43	24	10
8	234	243	250	208	189	184	189	201	196	182	175	170	166	161	159	155	147	138	132	129	129	134	142	149	152	139	117	131	144	124
9	228	232	247	185	157	144	137	135	137	142	145	144	142	143	149	163	186	179	170	174	188	187	181	177	163	154	150	128	112	112
10	234	242	251	217	209	197	167	146	133	126	122	120	115	108	102	102	102	91	84	82	85	97	123	122	111	111	83	62	48	38
11	225	246	253	239	224	192	168	152	142	136	135	134	126	115	110	112	118	115	111	110	115	129	152	145	133	128	114	98	85	74
12	239	249	251	209	188	178	174	175	179	185	186	180	177	179	188	206	230	214	209	217	226	223	226	224	211	214	205	174	156	146
13	231	245	252	227	210	198	188	182	179	179	182	190	202	208	198	193	197	203	189	176	168	164	164	165	167	166	155	139	125	113
14	228	233	247	193	172	167	172	187	181	168	162	158	152	146	145	144	137	127	119	117	118	123	131	136	145	152	131	129	145	114
15	225	240	253	239	218	190	173	164	159	157	155	152	145	139	133	128	127	127	126	125	127	136	149	135	125	124	113	94	80	72

dimension

Fig.11

node		learned value					capacitance [fF]				
dimension	0	1	2	3	4	0	1	2	3	4	comparison
0	5.031	-5.029	-5.053	-5.047	-5.029	518	15	14	14	15	266
1	-3.234	3.247	-3.254	-3.239	-3.243	15	339	14	14	14	176
2	-4.531	-4.539	4.523	-4.518	-4.543	14	14	467	15	14	241
3	-4.441	-4.426	-4.421	4.421	-4.415	14	14	14	457	15	236
4	-3.802	-3.878	-3.711	-3.801	3.780	17	14	22	17	396	207
5	-5.377	5.380	-5.382	-5.377	-5.375	14	552	14	14	14	283
6	4.835	-4.838	-4.820	-4.824	-4.839	497	14	14	14	14	255
7	-3.586	-3.697	-3.505	-3.485	3.588	19	14	23	24	378	198
8	-3.612	-3.603	3.679	-3.677	-3.524	17	17	381	14	21	197
9	-3.840	3.840	-3.837	-3.842	-3.840	14	398	14	14	14	206
10	-3.228	-3.052	-3.413	-3.368	3.246	23	32	14	16	346	184
11	-4.022	-4.019	-3.987	-3.995	3.999	14	14	15	15	415	215
12	-4.040	4.033	-4.032	-4.036	-4.039	14	417	14	14	14	216
13	-4.428	-4.433	-4.434	4.434	-4.436	14	14	14	457	14	235
14	-3.945	-3.946	3.928	-3.931	-3.975	15	15	409	16	14	212
15	-2.578	-2.578	-2.605	-2.596	2.594	15	15	14	14	273	144
dummy						2237	1573	2014	2342	1500	0

Fig.12

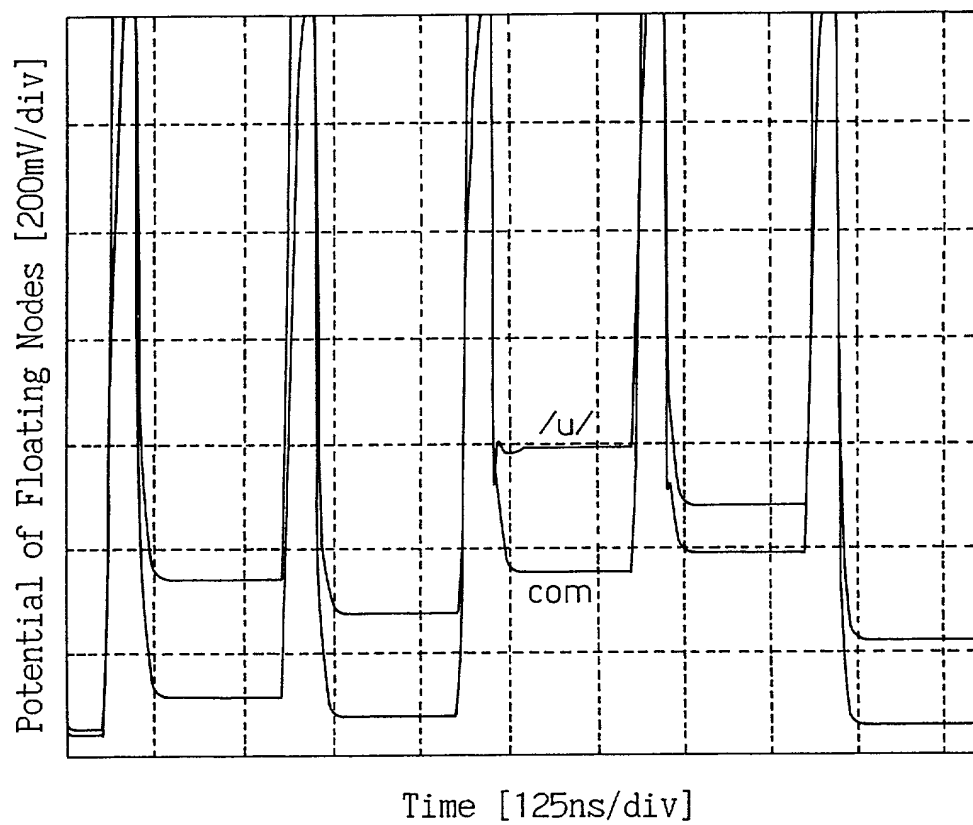


Fig.13

